



# Bio-Tech Consulting

Environmental and Permitting

Orlando [Headquarters]

3025 East South Street

Orlando, FL 32803

Cocoa

400 High Point Drive Suite 400

Cocoa, FL 32926

Jacksonville

11235 St. Johns Industrial Pkwy N Suite 2

Jacksonville, FL 32246

Key West

1107 Key Plaza

Suite 259

Key West, FL 33040

Lantana

445 West Lantana Road Suite 5

Lantana, FL 33462

Tallahassee

2560-1 Barrington Circle

Tallahassee, FL, 32308

Tampa

6011 Benjamin Road Suite 101-B

Tampa, FL 33634

July 23, 2025

Dear Mayor and City Commission,

My name is William F. Precht. I am a Marine Scientist by degree and training and I have presented numerous studies to the City of Key West pertaining to the purported impacts of cruise ships on the marine life from Key West Harbor out to the Florida reef tract. This includes performing coral, fish, and seagrass surveys as well as collecting periodic water quality (turbidity) monitoring data of both inbound and outbound commercial vessels including cruise ships from Key West Harbor. My team has also performed water quality assessments during the passage of both winter storms and hurricanes. My most recent study submitted to you on January 5, 2025 detailed the coral and environmental conditions in the vicinity of the cruise ship piers within the harbor.

My conclusion to that report is outlined below:

“In summary, there have been many unscientific claims about the purported impacts of the turbid prop-wash generated by cruise ships arriving and departing from Key West on the biological resources of the area. Those claims are false. From the City’s 2007 environmental study up to my December 20, 2024 analysis of the biological communities living within Key West Harbor tells us it has been a thriving environment over decades. While corals throughout the Florida Keys have seen catastrophic declines in coral cover and species diversity over the past five decades, the coral community living within Key West Harbor has been shown to be one of the most resilient to various coral stressors and most importantly, to the impacts associated with regional coral bleaching and disease outbreaks. Because of this, the corals living on the wharfs, piers, and pilings fronting the cruise ship docks in Key West are some of the most diverse and vibrant coral assemblages remaining within the FKNMS. In addition to corals, this biological community is replete with a plethora of other marine organisms making it one of the most unique habitats in all the Florida Keys (Precht et al. 2023).”

These studies conducted by myself and my team are based on observations made by multiple trained scientific divers while performing > 75 dives in Key West Harbor and vicinity over the past five years. Contrary to our findings, Safer Cleaner Ships (SCS) has repeatedly made claims laying blame on temporary turbidity from cruise ships for wrecking the reefs of the region. However, they have presented no science-based



**Bio-Tech Consulting**

Environmental and Permitting

observations or data showing this linkage, nor have they shown that the measured levels of turbidity caused by cruise ships cause any direct harm to benthic resources in Key West Harbor - never mind the reef tract that is eight miles away. In fact, the observations made by my team stand in stark contrast to the numerous unsubstantiated, false, and exaggerated claims made by SCS that are based on anecdote, supposition, and weak inference. – not science.

**I have also reviewed the public package for your meeting on July 23, 2025, and would like to correct the claim in the July 15, 2025 memo by Arlo Haskell that there were 32 specific violations of state and federal Laws regarding turbidity. This claim by Mr. Haskell is false.**

**There were no violations of either state or federal laws nor were there any violations of Chapter 80 of the Code of Ordinances of the City of Key West. Temporary prop-wash from any ship, including cruise ships while underway or docking within a federal navigation channel does not violate state or federal laws or Chapter 80 as they are authorized activities.** For instance, FKNMS regulations, 15 CFR § 922.162 specifically defines ‘prop dredging’ as “the use of a vessel's propulsion wash to dredge or otherwise alter the seabed of the Sanctuary. Prop dredging includes, but is not limited to, the use of propulsion wash deflectors or similar means of dredging or otherwise altering the seabed of the Sanctuary.” The definition also carefully notes “prop dredging does not include the disturbance to bottom sediments resulting from normal vessel propulsion.” The State of Florida and EPA standard set for turbidity in and around coral reef environments are specifically designed to protect these important resources during activities associated with marine construction projects, especially dredging. There is no language in the regulations pertaining to temporary turbidity created by the prop-wash of vessels in a dredged navigation channel or port. If this were the case, then all commercial and military vessels, not just cruise ships, transiting marked navigation channels or docking in a port would be subject to these rules. This would not only apply to Key West, but all ports in Florida including Port Miami and Port Everglades.

As well, turbidity caused by the propulsion of a commercial vessel stirring up bottom sediments is also not a pollutant nor is it considered a discharge. The standards regulating commercial vessels were developed by the USEPA in coordination with The United States Coast Guard (USCG) (USEPA 40 CFR Part 139). Through this Act, the Coast Guard is responsible for monitoring and enforcement of discharge of pollutants from all vessels greater than 79’ in length (Vessel General Permit for vessels operating in waters of the United States as defined by 40 CFR 122.2). The attached request by the City of Key West was sent to the Coast Guard. The Coast Guard regulations do not consider prop-wash associated with normal vessel operation to be a violation.

Please remember cruise ships have been coming to Key West for decades. In that time, while much of the Florida reef tract - from the Dry Tortugas to Biscayne National Park - have shown catastrophic levels of coral mortality associated with coral disease outbreaks and coral bleaching events, the coral community in Key West Harbor continues to show a significant, thriving environment with abundant corals living directly on and adjacent to the cruise ship piers. Large schools of Tarpon, giant goliath grouper, and numerous other important sport and commercial fish have also been documented directly under the cruise ship dock at Pier B and at Mallory Pier.

I would respectfully submit that the five-year misinformation campaign by SCS as it relates to temporary prop wash turbidity created by cruise ships has taken away the focus from the real water quality concerns for the Key West community which I believe better serve the tax payers. These include the following:

1. Public beaches where fecal coliform readings are at safe levels.
2. Mooring fields where boats lie on anchorage without following pump out protocols required of the FKNMS causing diminished water quality.
3. Stormwater run-off issues.
4. Accidental municipal sanitary sewage overflows or other unauthorized discharges.

Finally, I take great offense to the insinuation made by both SCS and the group "Last Stand" that Mote Marine Lab would be compromised scientifically if they were awarded the City's water quality monitoring contract. As a practicing marine scientist for the past 40+ years, I can tell you that the now 70-year world renowned reputation and commitment of Mote Marine to safeguarding all the waters of Florida and especially the Florida Keys is a benchmark for scientific standards and integrity. To think that Mote Marine would ever alter the science on behalf of a donor or funding agency is not just wrongheaded, it is completely unfounded and without merit. I hope this slanderous insinuation is met with swift censure of those responsible for the comments.

Again, based on my long-term monitoring of the marine resources throughout the FKNMS shows that the health of the coral and fish populations under Pier B and the Key West waterfront continue to be unique, vibrant, and remarkably resilient.

Please follow the science.

Respectfully yours,

*William F. Precht*

William F. Precht

Director of Coastal and Marine Sciences

Bio-Tech Consulting, Miami, FL

[Bprecht@bio-techconsulting.com](mailto:Bprecht@bio-techconsulting.com)

## PRECHT BIO

Since completing his graduate degree from the University of Miami's Rosenstiel School of Marine, Atmospheric, and Earth Science - Mr. Precht has specialized in the assessment, monitoring, restoration, and rehabilitation of various coastal resources, especially coral reef, seagrass, and mangrove systems. His contributions to the professional and academic ecological sciences community are nationally and internationally recognized, particularly in regard to historical ecology, disturbance ecology, ecological monitoring, and the application of ecological principals to coastal restoration. Bill's work draws upon significant, state-of-the-art research experience in field studies and theoretical analysis.

Mr. Precht is currently the Director of Coastal and Marine Science Programs for the environmental consulting company Bio-Tech Consulting and is based in Miami, Florida. In addition, he is presently the Specialty Chief Editor, Coral Reef Section for the scientific journal *Frontiers in Marine Science*. Bill also serves on the Board of Director's for the 501(C)(3) organization SCUBAnauts International and is a member of the Science Advisory Committee for the non-profit Reef Renewal, USA in Tavernier, FL.

With 40+ years of professional experience, Mr. Precht has developed strong technical and project management skills and has provided expert witness testimony for both the US Gov't and the private sector. In addition, he has vast expertise in environmental resource management and marine and estuarine research, mitigation planning, the ecological impact of marine disease epizootics, habitat restoration, and environmental regulation. He has been involved in scientific support for port expansion projects, large-scale fiber optic cable deployments, ship grounding response, Natural Resource Damage Assessments (NRDA), and restoration scaling, planning, and implementation. Mr. Precht has demonstrated success in creating long-term partnerships, team building, and coordinating multidisciplinary scientific programs. Bill is also a trained scientific diver and has performed over 5,500 scientific dives in his career.

From 2008 – 2012 he worked for National Oceanic and Atmospheric Administration (NOAA) in the Florida Keys National Marine Sanctuary (FKNMS) where he was the Program Manager and Team Lead of the Damage Assessment, Restoration, and Resource Protection Program where he provided scientific support for natural resource damage assessments, ship grounding response, restoration scaling, planning and implementation, and coral reef and seagrass monitoring. His work was focused on protecting, conserving, and restoring trust resources of the FKNMS.

In his spare time, Bill is a Lecturer in Columbia University's Climate School where he teaches a field class on 'Tropical Marine Ecology' in the Cayman Islands. He is also an Adjunct Faculty in the Department of Marine Science at Nova Southeastern University. Bill was formerly a Visiting Faculty in Northeastern University's Three Seas Marine Biology Program where he taught 'Coral Reef Ecology' from 1988 and 2020. Through this program, Bill trained over 600 students many of whom have become world renowned researchers and leaders in the fields of coral reef ecology, tropical marine ecology, global change biology, and marine conservation.

In 2006 he published the first book on coral reef restoration entitled "The Coral Reef Restoration Handbook" published by CRC Press in Boca Raton, FL. The late Senator Bob Graham (FL) wrote the foreword for this volume.

Bill is a Fellow of the International Coral Reef Society (ICRS).



---

**Subject:** Turbidity in Key West Harbor  
**Attachments:** Calling the NRC for Turbidity Incidents.pdf; Sec. 80-2 Pollution of Water.pdf; Q4 - 11 24 Quarterly Progress Presentation.pdf; Sec. 80-5 Enforcement.pdf

---

**From:** Todd C. Stoughton <[tstoughton@cityofkeywest-fl.gov](mailto:tstoughton@cityofkeywest-fl.gov)>  
**Sent:** Monday, June 9, 2025 4:30 PM  
**To:** Diaz Colon, Carlos J. LCDR USCG SEC KEY WEST (USA) <[Carlos.J.Diaz-Colon@uscg.mil](mailto:Carlos.J.Diaz-Colon@uscg.mil)>  
**Cc:** Ingram, Jason D CAPT USCG (USA) <[jason.d.ingram@uscg.mil](mailto:jason.d.ingram@uscg.mil)>; Brian L. Barroso <[brian.barroso@cityofkeywest-fl.gov](mailto:brian.barroso@cityofkeywest-fl.gov)>  
**Subject:** Turbidity in Key West Harbor

LCDR Diaz Colon,

Good afternoon. It has been requested from one of our City Commissioners to reach out to the enforcement authority for an issue within Key West Harbor. Without going into detail, the City has enacted two local ordinances (attached) that discuss water quality resulting in one of our elected officials pushing for enforcement efforts that would directly affect your inspectors and investigators. If you have time for a 10-minute phone call, I'd like to discuss in greater detail before they start calling the NRC number.

I'm available every day this week at 8:30am or between 2:00pm and 3:00pm. Thank you in advance.

Very Respectfully,

Todd

Todd Stoughton  
Assistant City Manager  
City of Key West  
1300 White Street  
Key West, FL 33040  
[tstoughton@cityofkeywest-fl.gov](mailto:tstoughton@cityofkeywest-fl.gov)  
Desk: (305) 809-3811

Yes, you can potentially call the National Response Center (NRC) to report certain types of turbidity incidents, specifically those involving spills of oil, hazardous substances, radiological materials, biological materials, or etiological substances. The NRC is the designated federal point of contact for these types of events. [🔗](#)

Here's a more detailed breakdown:

**What the NRC does:**

The NRC is a 24/7 call center that receives reports of incidents involving spills or releases of hazardous substances into the environment. [🔗](#)

**Reporting turbidity:**

While turbidity itself isn't a hazardous substance, if it's caused by a spill or release of a substance that the NRC handles (e.g., oil, chemicals), you can potentially report it to the NRC. [🔗](#)

**Other options:**

You can also report to your local government office, state environmental agency, or the EPA Regional office or U.S. Coast Guard Marine Safety Office. [🔗](#)

**In Key West, FL:**

- You can contact the NRC to report spills or releases that meet the NRC's reporting criteria. [🔗](#)
- You can also contact the local government, state environmental agency, or the U.S. Coast Guard Marine Safety Office in Key West. [🔗](#)

**Important notes:**

- The NRC is primarily focused on spills or releases of specific hazardous substances, not general turbidity concerns. [🔗](#)
- If you have a general turbidity concern (e.g., from sediment runoff), it's best to contact your local or state environmental agency first.

---

## **Sec. 80-2. Pollution of water.**

- (1) It shall be unlawful for any vessel to deposit, place or discharge any pollutant into the waterways of the City of Key West.
- (2) Vessels docking at the City of Key West shall at all times be in full compliance with all applicable state, federal and international safety, health and environmental protection statutes, regulations, standards and requirements, including, but not limited to, the Oil Pollution Act of 1990, the International Convention for Safety of Life at Sea, the International Convention for Prevention of Pollution from Ships, and shall have a valid certificate of inspection. In the event of a vessel pollutant discharge into the waterways of the City of Key West, the vessel responsible for the discharge shall take immediate action to clean up the discharge. Cleanup is to be accomplished in the shortest time possible, using industry approved standard methods, so as to limit in every way possible, damage to the environment. In any instance where it is determined by the City of Key West that cleanup efforts are not being undertaken in a timely and/or adequate manner by the responsible Vessel, the City of Key West may order resources, as necessary, to commence and complete the pollutant discharge cleanup. In such cases, the actual cost of the cleanup plus an administrative fee of 15% of the actual cost of cleanup will be charged to the responsible vessel.
- (3) Full payment of the cleanup costs, including administrative fee, must be paid by vessel before the vessel will be permitted to sail from the City of Key West. In instances where a vessel is prohibited from sailing due to failure to pay actual cleanup costs and administrative fee as prescribed by this section: (a)an additional one thousand (\$1,000) dollar per-day pollutant discharge cleanup management fee will assessed until such time as vessel sails from the City of Key West (b)the City of Key West will provide dock space or other anchorage and (c) the vessel prohibited at then prevailing rates.
- (4) In the event any oil or hazardous substance is discharged into or upon the waterway of the City of Key West, in a harmful or reportable quantity, the responsible vessel shall immediately notify all appropriate state and local agencies and the National Response Notification Center.

(Ord. No. 22-07, § 1, 4-5-2022)

# Monitoring Water Quality Around Key West: Progress Report

**Dr. Patrick Rice**

**Chief Science and Research Officer**

**The College of the Florida Keys**

**November 14, 2023**



THE  
COLLEGE  
OF THE  
FLORIDA KEYS



**FIU**  
FLORIDA  
INTERNATIONAL  
UNIVERSITY



## 3<sup>rd</sup> EPA Grant: Chemicals of Emerging Concern (CECs) in Areas of Concern (AOC)

### *Objectives*

1. Continue water quality monitoring in the Key West harbor and ship channel using existing technology and infrastructure.
2. Expand water quality monitoring to eight AOC around the islands of Key West using an Autonomous Underwater Vehicle equipped with sensors for dissolved oxygen, temperature, salinity, turbidity, and total algae.
3. Expand water quality monitoring to beach AOC around the southern section of Key West for oxybenzone in the marine food chain.
4. Expand water quality monitoring to seven AOC around the islands of Key West for sewage discharge indicators (i.e. ammonia and sucralose).
5. Expand water quality monitoring to marine environment near Stock Island Landfill for toxic pollutants (i.e. hydrogen sulfide).
6. Provide data and input for the City of Key West's Water Quality Improvement Plan.







## ***Objective 1***

Continue water quality monitoring in the Key West harbor and ship channel using existing technology and infrastructure.



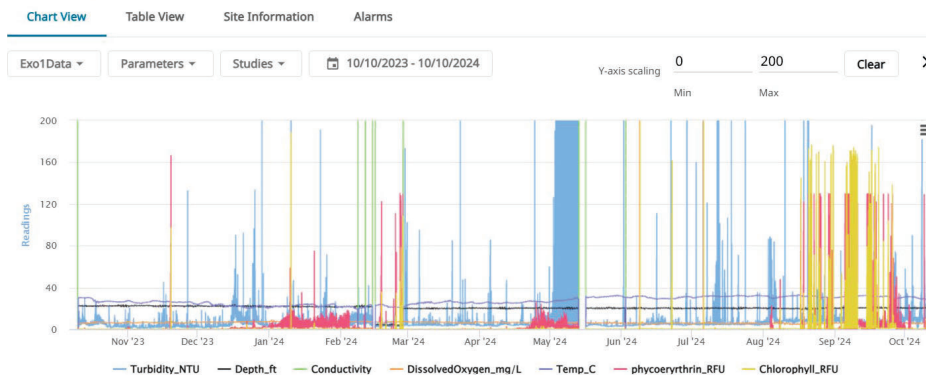
# Objective 1

## Successes:

- Over a year of water sample data collected from the Key West Harbor and Ship Channel
- Over a year of water sample data collected from Eastern Dry Rocks and Western Dry Rocks
- Over a year of data from the Mallory Square monitoring equipment (i.e. Turnkey System)

⌵ Mallory Square

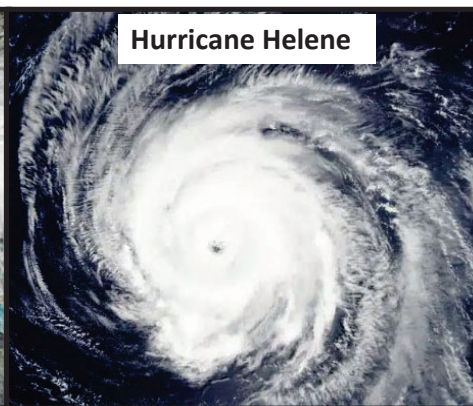
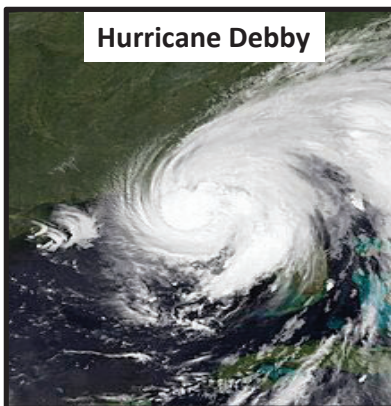
[Download](#) [Data Back](#)



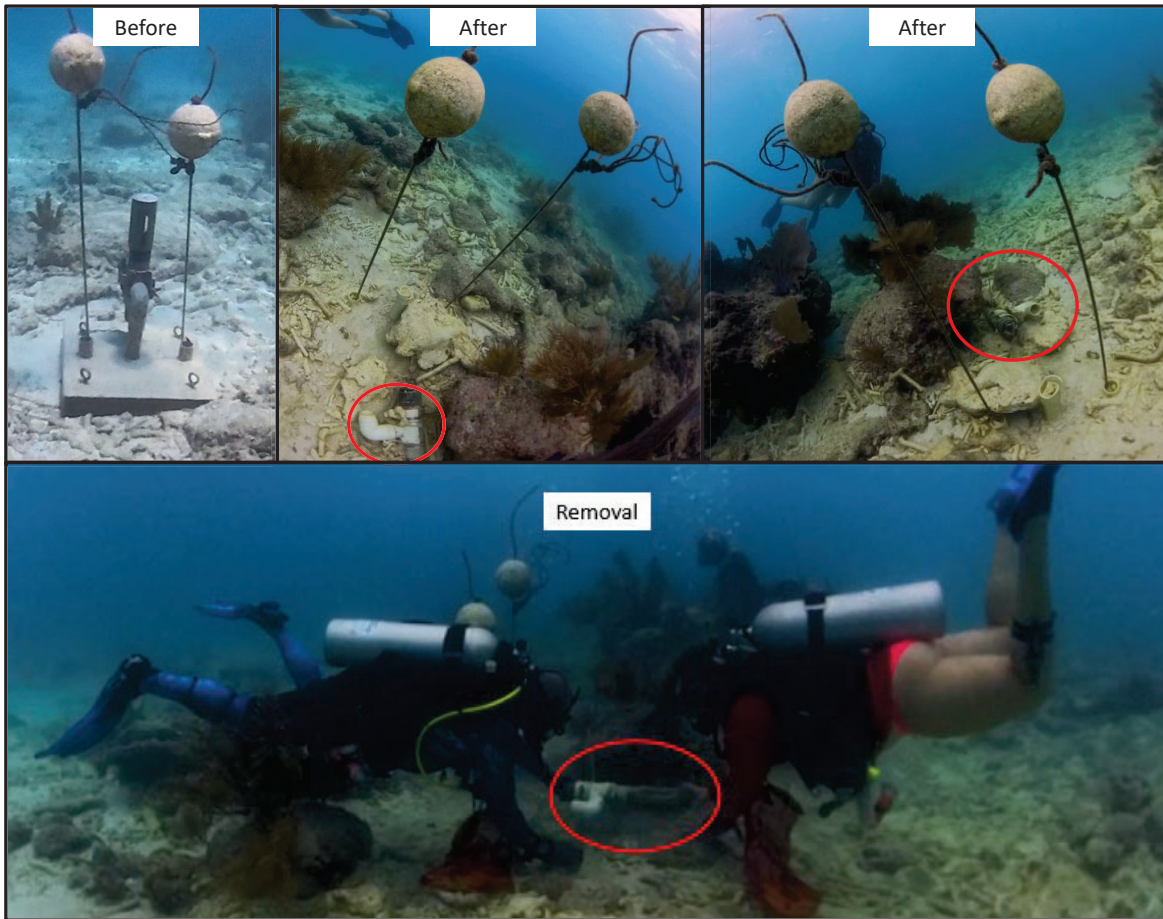
# ***Objective 1***

## **Challenges:**

- Weather
  - Wind
  - Squalls
  - Tropical Storms and Hurricanes
- Equipment failures
- Research Assistant turnover







# Cruise ship data in the Key West Harbor

- ❑ 244 ships have visited KW Harbor since Oct. 12, 2023 (the date the TK system was installed at Mallory Square)
- ❑ Cruise ships range in size (i.e. capacity) from:
  - Smallest - Capacity = 49 passengers
  - Largest - Capacity = 3,646 passengers
- ❑ Data collected on:
  - Capacity
  - Arrival/Departure time
  - Ambient water quality at arrival/departure
  - Tides
  - Wind direction
  - Wind speed
- ❑ EPA standard not to exceed  $\Delta \geq 29$  NTU beyond background turbidity (F.A.C. 62-302: Water Quality Standards)
- ❑ 32 turbidity events associated with cruise ships exceeded EPA standards (13.1% of total cruise ship visits)
- ❑ The most substantial turbidity event was  $> 6.5$  times beyond the EPA standards (i.e.  $\Delta > 190$  NTU)



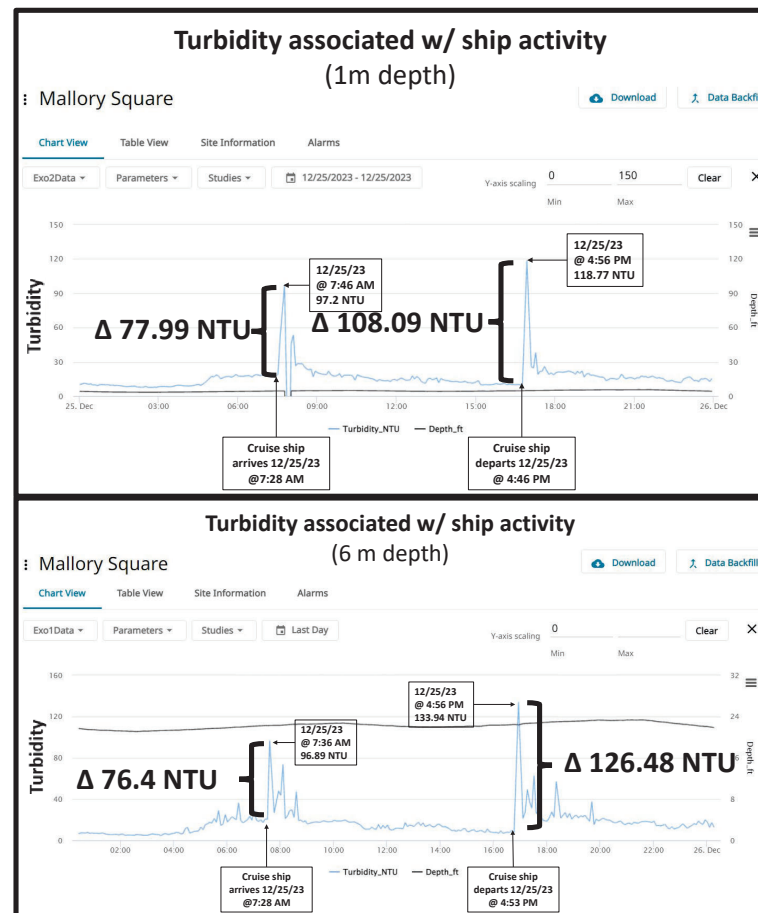
Florida Administrative Code (F.A.C.)  
CHAPTER 62-302.530 Table: Surface Water Quality Criteria  
Effective May 19, 2015

Criteria for Surface Water Quality Classifications							
Parameter	Units	Class I	Class II	Class III and Class III-Limited (see Note 4)		Class IV	Class V
				Predominantly Fresh Waters	Predominantly Marine Waters		
(69) Turbidity	Nephelometric Turbidity Units (NTU)	$\leq 29$ above natural background conditions	$\leq 29$ above natural background conditions	$\leq 29$ above natural background conditions	$\leq 29$ above natural background conditions	$\leq 29$ above natural background conditions	$\leq 29$ above natural background conditions

<https://www.flrules.org/gateway/ChapterHome.asp?Chapter=62-302>

## Double Turbidity Event

- Two turbidity events on 12/25/2023
- Shallow sonde data:
- Arrival turbidity spike of  $\Delta = 77.99$  NTU at 7:46 AM
  - Departure turbidity spike of  $\Delta = 108.09$  at 4:56 PM
  - $\Delta = 3.7$  times EPA standard
- Deep sonde data:
- Arrival turbidity spike of  $\Delta = 76.4$  NTU at 7:46 AM
  - Departure turbidity spike of  $\Delta = 126.48$  at 4:56 PM
  - $\Delta > 4$  times EPA standard

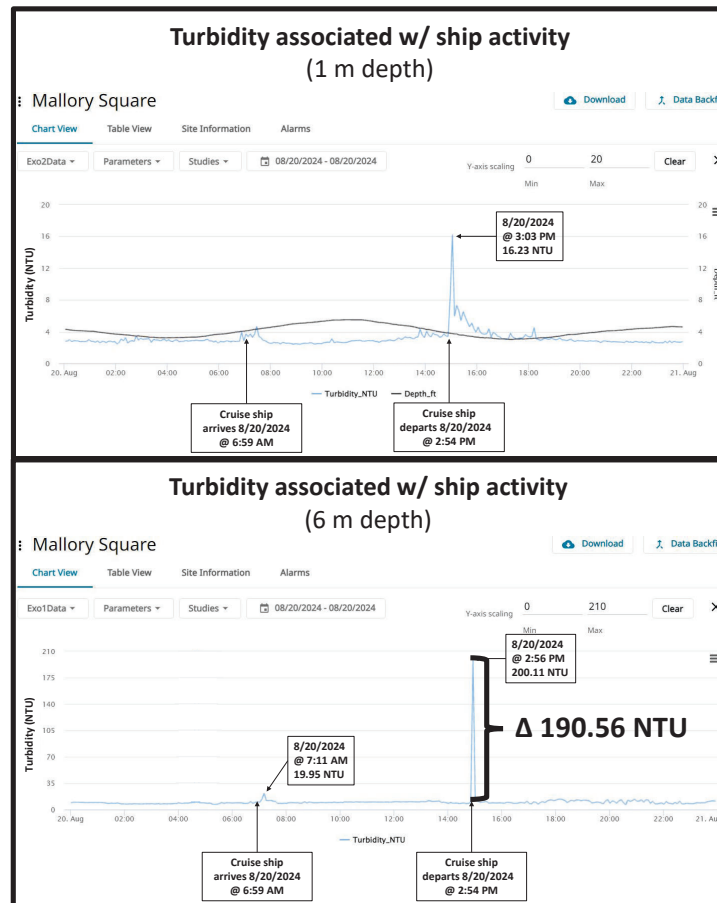




## Most Severe Turbidity Event

- The most significant turbidity event of the year on 8/20/2024
- Deep sonde data:

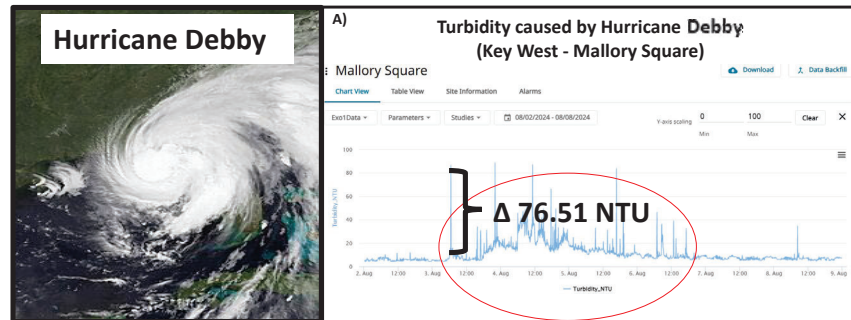
- Departure turbidity spike of  $\Delta = 190.56$  NTU at 2:56 PM
- >6.5 times beyond EPA standard (not to exceed  $\Delta \geq 29$  NTU)



## Turbidity Events Associated w/ Hurricanes

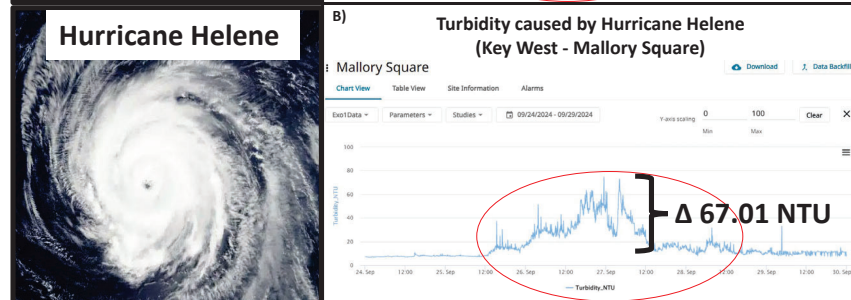
- Hurricane Debby (Aug. 3-6, 2024)

- $\Delta > 76$  NTU
- $> 2$  times EPA standard



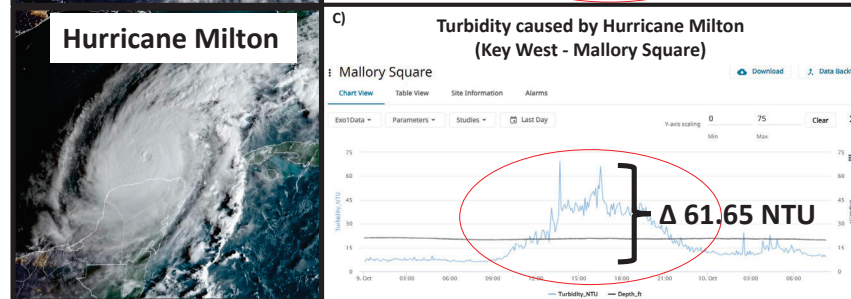
- Hurricane Helene (Sept. 26-28, 2024)

- $\Delta > 67$  NTU
- $> 2$  times EPA standard



- Hurricane Milton (Oct. 9-10, 2024)

- $\Delta > 61$  NTU
- $> 2$  times EPA standard

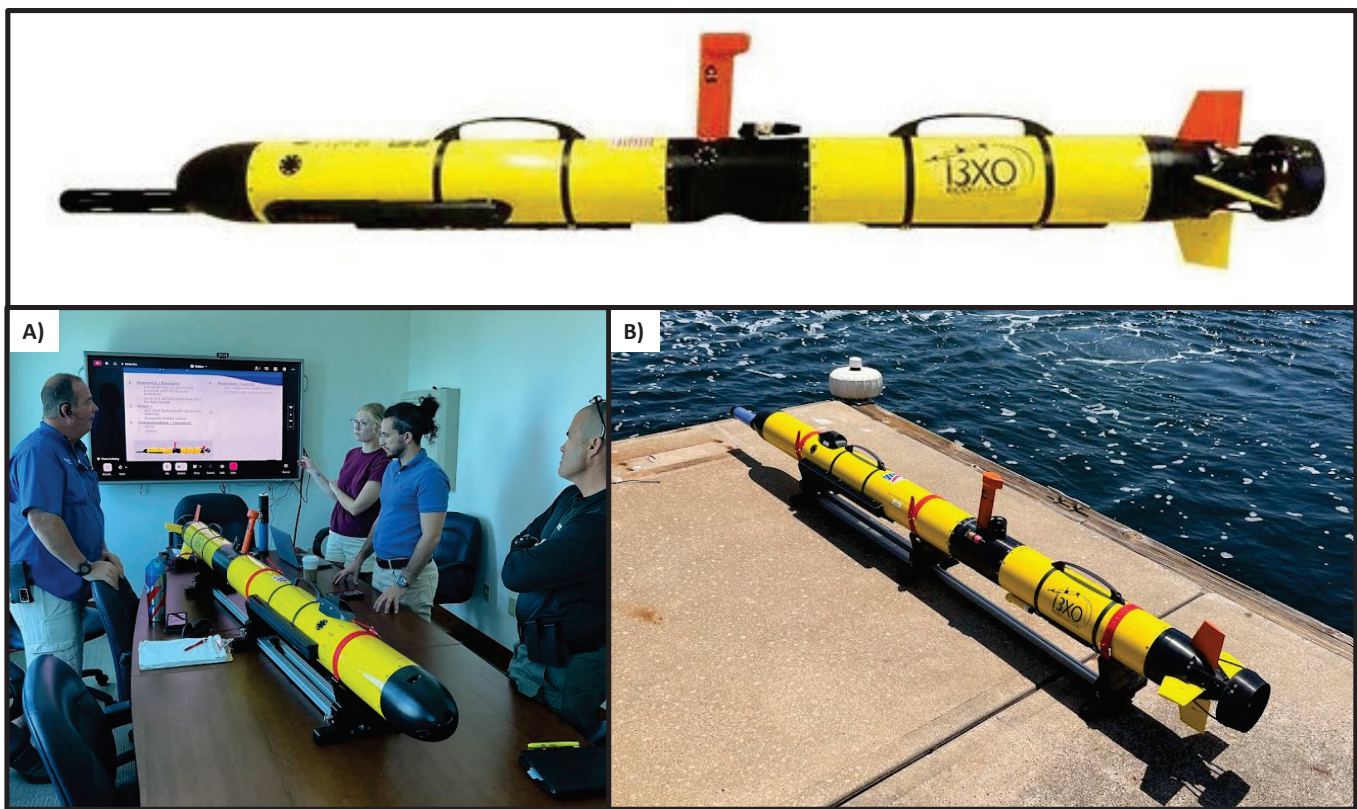


## Objective 2

Expand water quality monitoring to eight AOC around the islands of Key West using an Autonomous Underwater Vehicle equipped with sensors for dissolved oxygen, temperature, salinity, turbidity, and total algae.



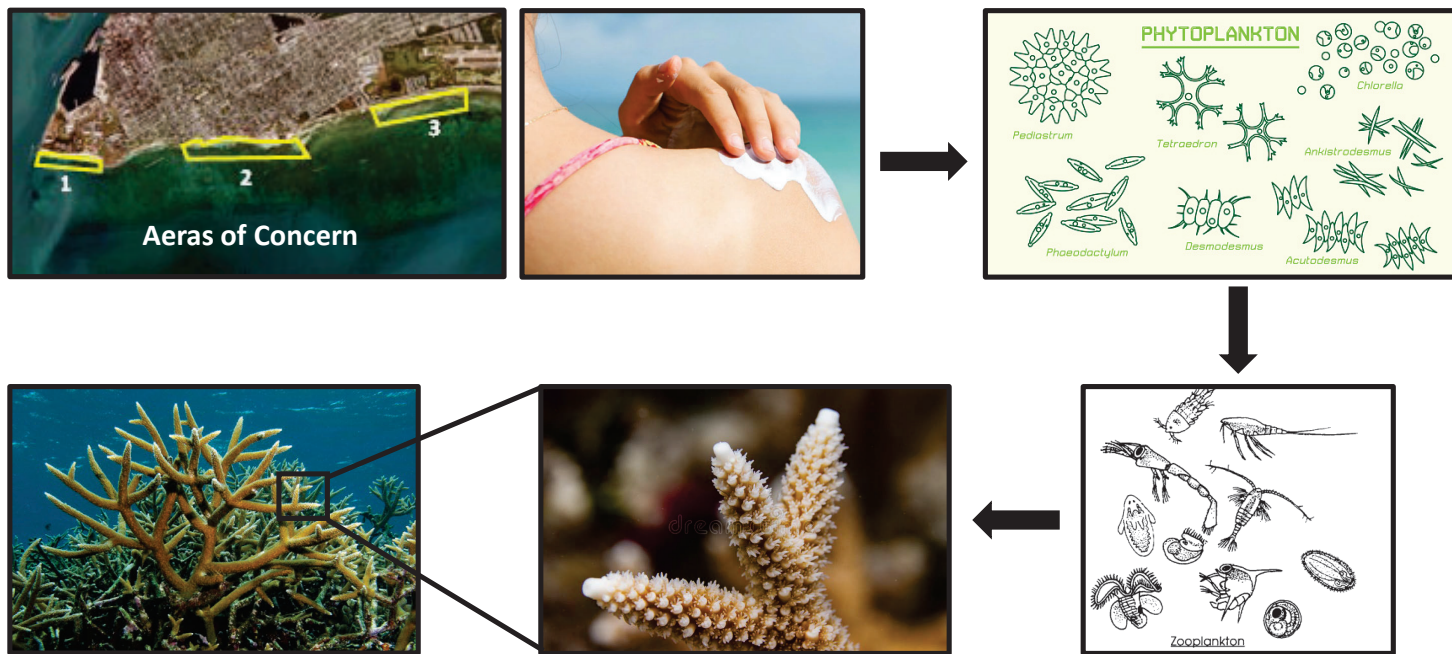
## YSI i3XO EcoMapper Autonomous Underwater Vehicle (AUV)





### ***Objective 3.***

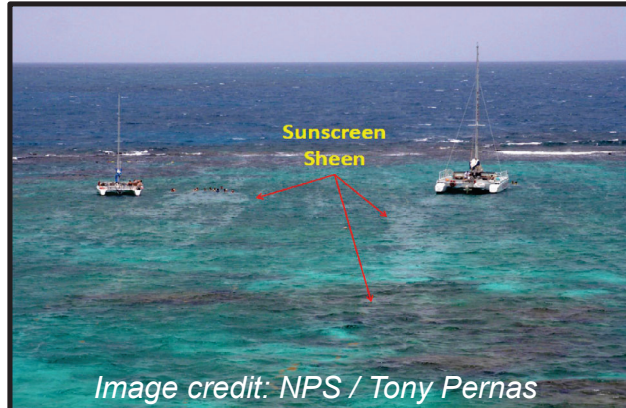
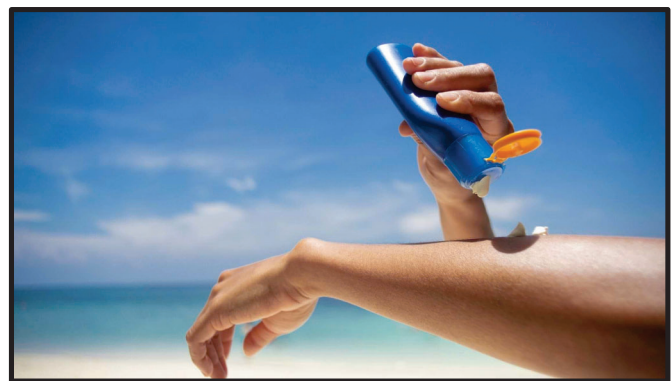
**Expand water quality monitoring to beach AOC around the southern section of Key West for oxybenzone in the marine food chain**



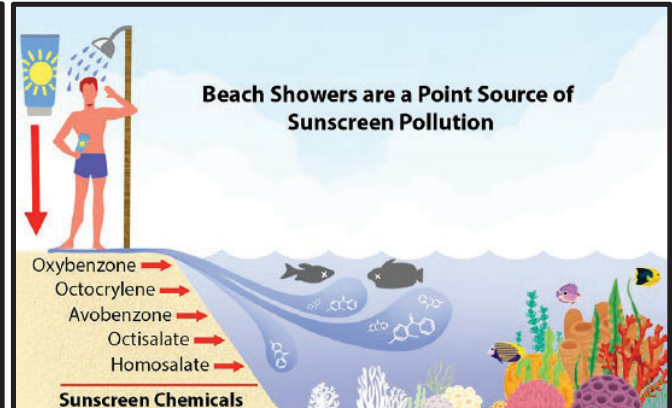
## Sunscreen Pollution: Oxybenzone

### Sources:

- Beach goers that enter the water with sunscreen products with oxybenzone
- Even beach goers that don't enter the water but use beach showers (Downs et al., 2022)
- This summer a new method for oxybenzone analysis (Magrin et al., 2024)
- Snorkelers with sunscreen



*Image credit: NPS / Tony Pernas*



*Image credit: Downs et al., 2022*



# Sunscreen Pollution on Key West Beaches: Oxybenzone

## Preliminary Data:

### Ft. Zachary Taylor

- March 2017 (unpublished data) sample indicates 8.115  $\mu\text{g/L}$

### Higgs beach

- October 2021 (unpublished data) sample indicates 1.6  $\mu\text{g/L}$
- March 2021 (unpublished data) sample indicates 6.5  $\mu\text{g/L}$

### Smathers Beach

- No preliminary data

## Note:

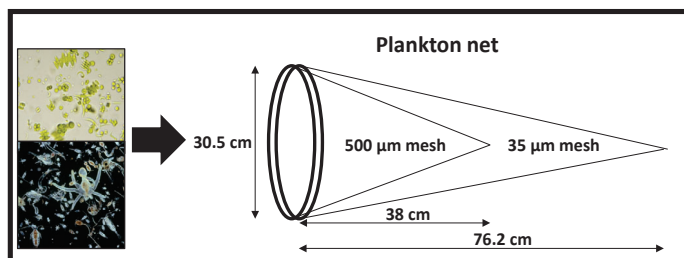
$\geq 6.5 \mu\text{g/L}$  oxybenzone in light shown can cause deformity in coral planulae (Downs et al., 2016)



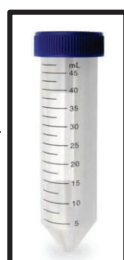
## Literature Cited:

Downs, C.A., E. Kramarsky-Winter, R. Segal, J. Fauth, S. Knutson, O. Bronstein, F.R. Ciner, R. Jeger, Y. Lichtenfeld, C. Woodley, P. Pennington, K. Cadenas, A. Kushmaro, Y. Loya. 2016. Toxicopathological Effects of the Sunscreen UV Filter, Oxybenzone (Benzophenone-3), on Coral Planulae and Cultured Primary Cells and Its Environmental Contamination in Hawaii and the U.S. Virgin Islands. *Arch Environ Contam Toxicol* 70:265–288, doi:[10.1007/s00244-015-0227-7](https://doi.org/10.1007/s00244-015-0227-7)

A) Plankton sample



B) Centrifuge tube



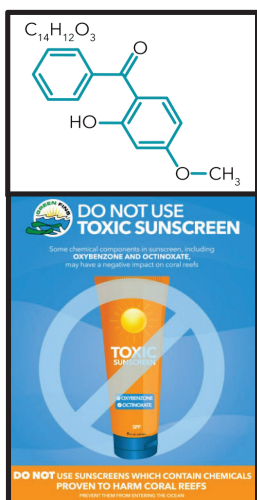
C) Liquid nitrogen



D) Ultra-low freezer



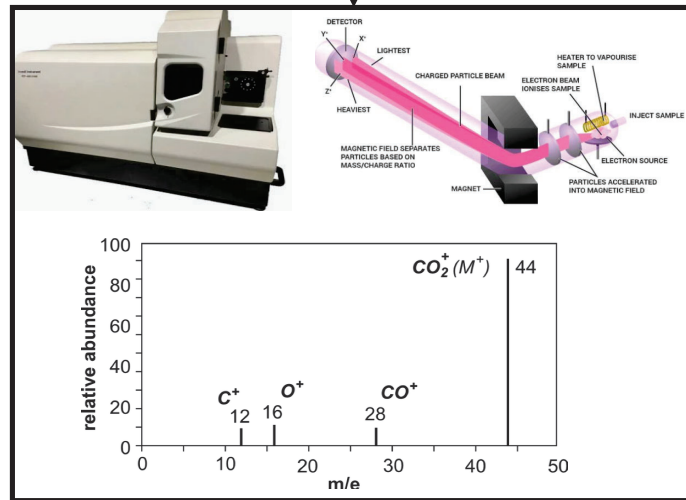
E) Oxybenzone



F) Algae culture



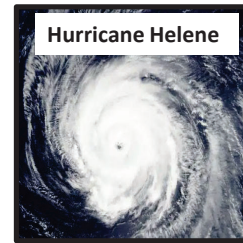
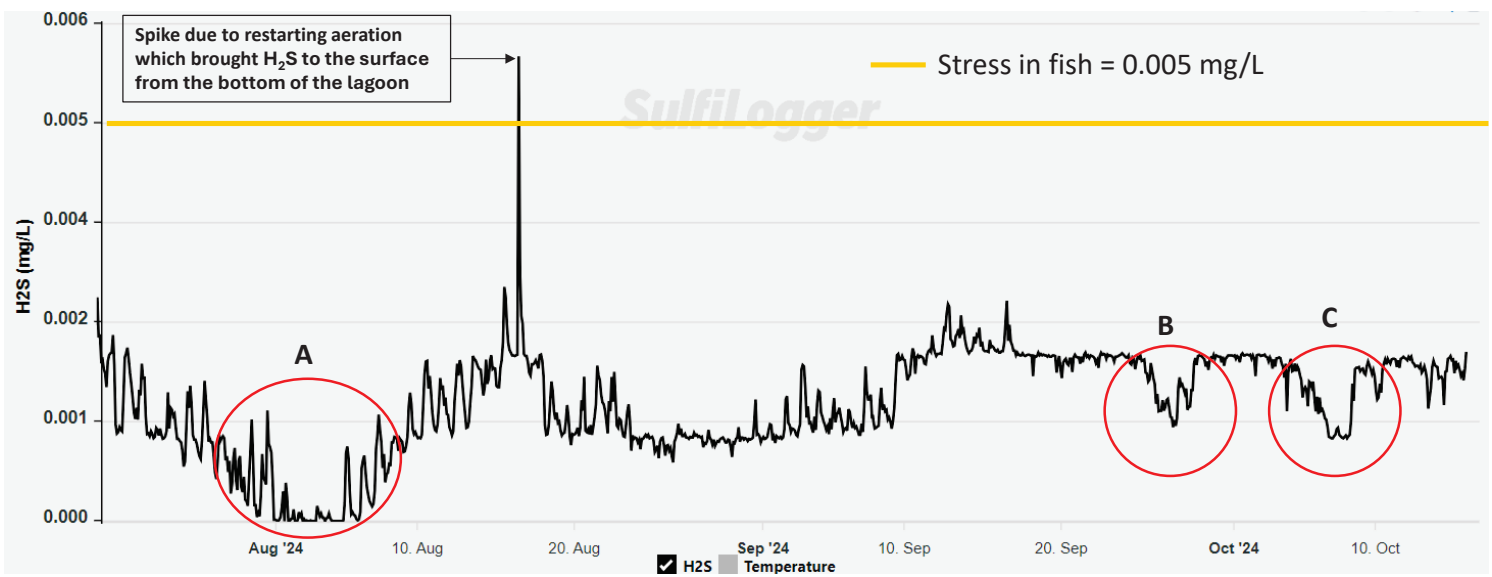
G) Mass spectrometer



**Objectives 5** - Expand water quality monitoring to marine environment near Stock Island Landfill for toxic pollutants (i.e. hydrogen sulfide).



## Hydrogen Sulfide in Surface Water of CFK Lagoon



**Objective 6. Provide data and input for the City of Key West's Water Quality Improvement Plan**

- Development of a GIS based water quality monitoring website
- Development of a Key West water quality monitoring consortium:
  - CFK
  - City of Key West
  - Florida Atlantic University
  - Reef Relief
  - Jacob's Laboratory (Key West, FL)
  - Florida Department of Environmental Protection
  - Florida Department of Health
  - Monroe County Sheriff's Office – Underwater Search and Recovery

**Water Quality Monitoring Consortium**



**Key West Water Quality Improvement Plan**





Dr. Patrick Rice  
Chief Science & Research Officer  
The College of the Florida Keys  
5901 College Rd.  
Key West, FL 33040  
Email: [Patrick.Rice@cfk.edu](mailto:Patrick.Rice@cfk.edu)

## Questions?



### Special thanks to:

- CFK Marine Science Technicians, Research Assistants, and Scientific Dive Team
- Florida Department of Environmental Protection (FDEP)
- Florida International University (FIU)
- Environmental Protection Agency (EPA)
- City of Key West



---

**Sec. 80-5. Enforcement.**

The City of Key West shall coordinate with state and federal agencies to ensure that vessel operations conform to all applicable laws relating to Sec. 80-2(2).

(Ord. No. 22-07, § 1, 4-5-2022)